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ABSTRACT

This report outlines the information needed for educators to begin using new multimedia educational technology in classroom instruction. The report describes the procedures used by educators from Bloomington (Minnesota) Schools (District #271) to incorporate HyperCard, interactive video, microcomputers, and other multimedia educational equipment into their classrooms. Three appendices include a description of the Bloomington multimedia work station, information on multimedia applications using hypermedia software on different computers, and lists of hypermedia resources (software and videodisc producers), selected videodiscs, and accessories for controlling your own stacks. (DB)

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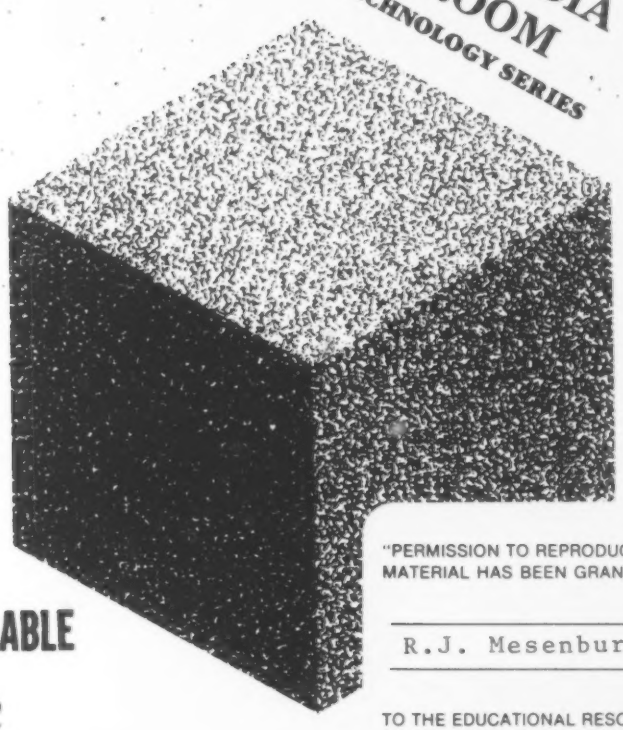

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MINNESOTA DEPARTMENT OF EDUCATION INSTRUCTIONAL DESIGN SECTION

Desktop Multimedia *in* the *Classroom*

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Preface

Education's vision of innovative learning programs changes as technology responds to the instructional needs of educators. Indeed, with the growth of multimedia technology, educators have an exciting new tool that is responsive to a wide range of instructional patterns and learning styles. It is so adaptable that potentially it can significantly alter classroom instruction. But with this exciting potential, there comes new challenges and problems. A growing number of districts across the state have asked the Minnesota Department of Education for guidance in merging multimedia technology into their educational programs.

This guide outlines the information needed to begin using the technology. Since the physical, financial, human resources, and needs of each district are unique, this publication is not intended to serve as a prescription. Rather, it is a description highlighting the procedure used by educators from Bloomington, Minnesota Schools (District #271) to incorporate multimedia into their classrooms.

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Chapter One

Multimedia in Education

Multimedia in Education

Multimedia Defined

Desktop multimedia is the powerful combination of text, graphics, sound, animation, and video under computer control. For education, multimedia has three characteristics:

1. Multiple media types. Text, graphics, sound, animation, and video can be accessed from the computer desktop of a student or teacher.

2. Nonlinear environments. Multimedia enables students and teachers to link and present information by association, rather than the traditional linear format of videotapes and books.

3. Users are producers. Students and teachers have access to a rich set of tools that empowers them to manipulate and incorporate a vast array of multimedia elements into projects and presentations. Multimedia adds new dimensions to each aspect of the current instructional process.

In the current model, teachers use lectures, movies, books, recordings, and hands-on experiences as just some of the ways for teaching concepts to students.

Typically, any classroom will be filled with students who have a variety of learning styles, and using multimedia allows teachers to simultaneously present information to address varying learning styles. For example, to teach about the migration of the Rocky Mountain elk, a teacher might present information in the form of text, graphics, sound, animation, and videodisc images.

Presently, students research information for written and oral reports. In conjunction with a classroom presentation, a teacher might ask the students to do their own research on that subject. With the use of HyperCard® and an Apple Macintosh® computer, students could explore and evaluate information on the winter habitat of the Rocky Mountain elk. Because of the rich nonlinear nature of multimedia information, students could make connections between various elements of the information based on their own conclusions.

Currently, students create reports and may present these reports to the class. After completing the necessary research, students might begin by recording their research in their own HyperCard stack. They might

then enhance the information by incorporating digitized images or sounds, accessing images on a videodisc or creating an animated map that shows the migratory path of the Rocky Mountain elk. Upon completion of the project, the students might print out the stack or present their projects to their classmates.

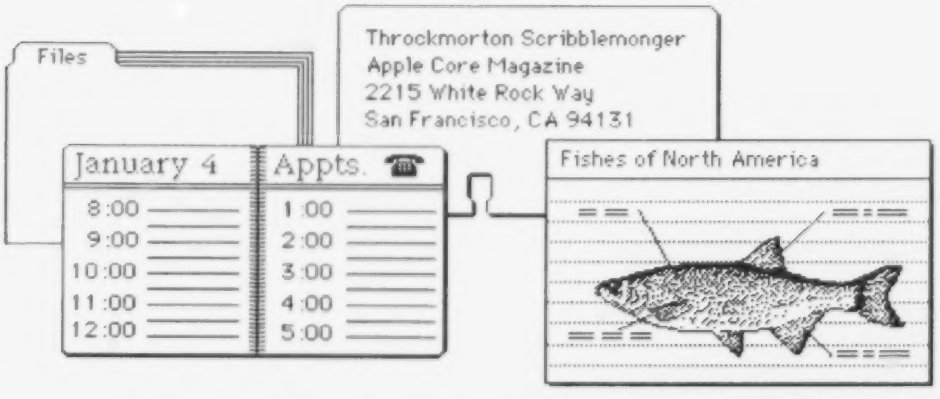
Multimedia is not a replacement for the teacher. But an excellent educator can use multimedia to:

- Address multiple learning styles of all students
- Manage today's information explosion by researching better
- Foster critical thinking and creativity for students and teachers.

HyperCard Defined

Very simply, HyperCard is a piece of software that can be used with all Macintosh computers. In essence, HyperCard has two fundamental functions: it is an information organizer and it is an authoring tool.

As an information organizer, HyperCard can be used to read and access information organized by other HyperCard authors. The flexibility of HyperCard also allows users to add their own information to what's already there. All HyperCard information appears on **cards**, which may include both text and pictures.



These cards are then grouped together with other cards into **stacks**. The cards in a stack share the same look and contain related information. With the computer, the user can access, arrange, and move freely and instantly among cards.

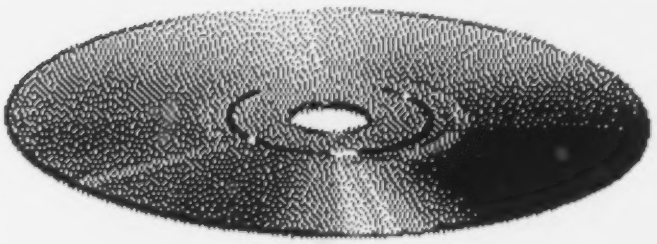
HyperCard is also an authoring tool. In other words, it serves as a personal toolkit where the user can create personalized applications for gathering, organizing, presenting, searching, and customizing information. Related information is easily tied together with button **links**. Then, with a single "click" of a button, the user can move between cards; whether they are in the same stack or a different one.

Videodisc Defined

A videodisc is a plastic platter that has information encoded digitally. Unlike a videotape, a videodisc can incorporate all existing instructional media: slides, filmstrips, motion pictures, charts, graphs, data, dual audio, illustrations, microfilm, videotape, and, of course, text.

In addition to its capacity to integrate varied media, the videodisc has many other distinct advantages over videotape:

- ☆ It provides better, sharper pictures
- ☆ It does not jitter, even in still frame, slow motion, forward, and reverse
- ☆ It allows the user to access any point within seconds; unlike video which often demands minutes to rewind and find an exact location
- ☆ It can contain much more information than a videotape. One disc, for example, contains the extensive art collection of the National Gallery of Art—including motion picture guided tours
- ☆ It is much more durable; it doesn't wear out from use. Each disc is coated with clear vinyl to protect it from dirt, dust, and fingerprints. Moreover, the platter is read by a laser so that even with hundreds of hours of use produces no wear and tear on the disc.

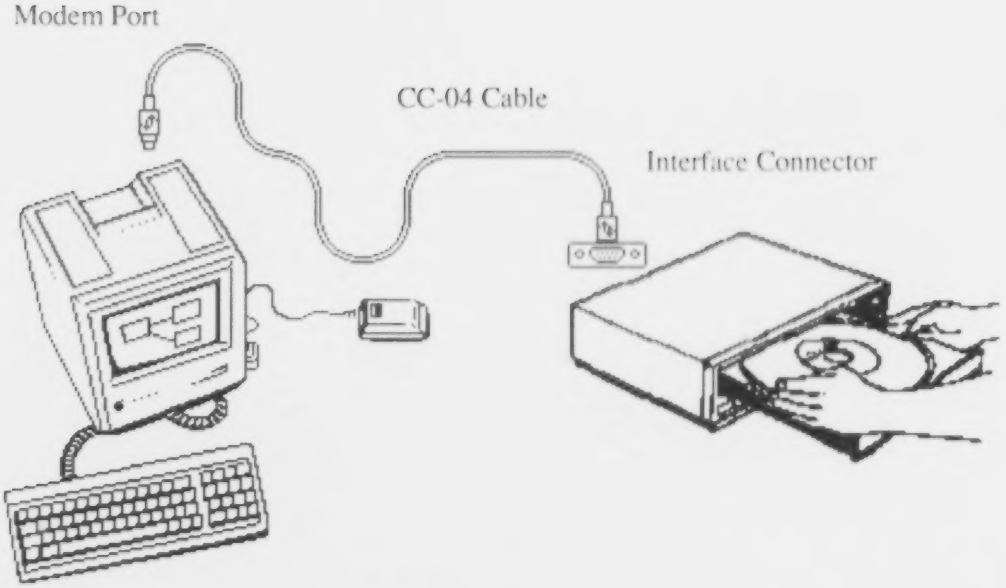


Videodiscs come in two formats: Constant Linear Velocity (CLV) and Constant Angular Velocity (CAV). The CLV format is like a movie; when turned on, it plays to the end. This format, however, prohibits addressing or displaying specific frames by location. Hence, it is not applicable for computer interactive programs.

The CAV formatted videodisc is recorded so that it can start and stop anywhere on the disc. It is this format that can be controlled by a computer to search out any frame and play any particular part of the videodisc. Consequently, users have great control over the video; they can pick and choose the parts or individual frames they want to view.

A Basic Multimedia System

The versatility of the videodisc combined with the memory and processing capabilities of computers creates a very intelligent and creative **hypermedia system**. The simple connection between a computer and a videodisc player (modem port to interface connector on the player) links-up a system that provides educators a teaching technology that goes beyond anything they have ever had before in the classroom.



Canned and Repurposed Programs

Educators can purchase **"canned"** or ready-made software. These are hypermedia/videodisc programs that have all the database information on pre-made stacks. The users simply have to point and click and the computer takes them to the cards and video images they want.

Sometimes, however, the canned software may not fit a particular teaching situation. In this case, there are several programs on the market that can control videodisc players (see Appendix B), thereby allowing users to manipulate or **repurpose** any CAV format disc. For example, the University of Delaware Music Series discs have within them many wonderful slides of master artworks. Teachers who

wanted to organize and display these particular art frames can use a controller program like the Voyager Stack 2.0 to repurpose the information in a way that meets their individual needs. The flexibility is seemingly unlimited.

Chapter Two

The Bloomington Project

The Bloomington Project

Overview of Bloomington's Hypermedia Project

Each year, part of Bloomington's district budget for instructional technology is dedicated to support new and innovative technology-based instructional projects. The results of these projects provide insight into what technology works and what doesn't; what is effective and what is unproductive; and what the teachers can readily use and what really isn't applicable to solid student learning. In other words, the projects form the backbone of Bloomington's long-range technology purchase plan.

One of the major projects initiated during the 1988-89 school year was the classroom use of videodisc controlled by HyperCard software. The overall goal of this study was straightforward—to discover and subsequently assess the benefits associated with the instructional use of HyperCard/videodisc technology. Four investigative questions formed the core of the project:

1. How does HyperCard/videodisc technology improve instruction?

2. How can teachers best be trained to use the technology in their classrooms?

3. What subjects and instructional units are most appropriate to HyperCard/videodisc technology applications?

4. What are the most productive means to disseminate statewide the information gained through the project?

Preliminary Program Steps

Before the project moved into the classrooms, four important preliminary steps had to be taken.

Step One: Available HyperCard-controlled videodisc materials were researched and catalogued. This task was directed by the district director of instructional materials and the instructional technology specialist. At the outset of the project (Spring 1989), materials in this format proved to be limited, but since then have grown steadily.

Step Two: Identified materials were assessed in terms of their cost, availability, and most importantly, their appropriateness for the secondary curricula. Materials had to fit the reality of classroom instruction.

Step Three: The targeted materials were matched with corresponding classroom programs and teachers.

Step Four: The instructional technology specialist met with individual teachers to "recruit" them for the project–a very important phase. Staff members were shown specific HyperCard materials, the instructional potential of the materials was evaluated, teacher questions and concerns were discussed, and project support services were carefully outlined. The success of the project rests squarely on the motivation and dedication of the participating volunteers. Repeatedly, the teachers wanted insight into five recurring questions:

1. How will my students benefit?
2. How will media technology improve my instruction?
3. How good are the materials?
4. How much time will the project consume?
5. Will the project continue if it is successful?
6. What kind of support will I receive?
7. What will I have to do?
8. How do I become proficient with the technology?
9. What will I gain by the project?

These four preliminary steps resulted in the development of five hypermedia stations: two were based in a team-taught, interdisciplinary humanities program using The University of Delaware Music Series and the National Art Gallery discs; a third was positioned in a senior high physical science class using a disc titled Earth Science; and the fourth and fifth stations were located in two biology courses with the discs Cell Biology and Biology.

Bloomington's Technology Project Team

Bob Peterson	—	Curriculum Development Generalist
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George Drier	—	Physics Teacher John F. Kennedy High School
Bob Klungness	—	Biology Teacher Jefferson High School
Jim Burke	—	Chemistry Teacher Jefferson High School

Teacher Reaction

It is important at this stage to review the initial teacher reaction to the project. The directors of the program realized that the strength and success of the project depended on the motivation and willingness of the volunteers.

At the time this project was introduced, none of the solicited teachers had heard of nor seen HyperCard/videodisc technology. This meant that a successful launching of the program depended on a delicate blend of motivation, inservice, and patience. Once the teachers had time to see and "play" around with their respective discs, their creativity and instructional vision soared. It is essential that the classroom teachers understand they will be the controlling element in the project—they will introduce, position, design, implement, and ultimately assess the value of the technology. The teacher remains the professional instructional decision maker.

Through the course of the project, a uniform evolution of teacher technology acceptance emerged. Although the staff members accepted the technology at their own pace and in their own way, nine general phases of growth appeared in one form or another:

1. An initial fascination with the quality and power of the technology

2. A generally increased awareness of technology available outside the classroom

3. A somewhat hesitant use of the technology as packaged, little experimentation

4. A "plateau" period; often the technology sat dormant for a length of time

5. A phase of experimentation where teachers "tampered" with the packaged programs, often modifying them to meet their curriculum and instructional designs

6. A confidence spurt where teachers grew to realize the multidimensional nature of HyperCard/videodisc technology

7. A "takeoff" phase where discs were repurposed with teacher-created HyperCard stacks

8. A desire to push the technology as far as it can go—even to the point of creating their own videodiscs

9. An "evangelical" phase in which the users wanted to spread the good news of technology and support others in their use of HyperCard.

Tips for a Successful Program

The following is a shorthand guide to success with HyperCard/videodisc technology. Many of the tips outlined here were discovered by trial and error; sometimes they were recognized in retrospect, other times they were the product of necessity. The Bloomington technology team believes these tips will help others implement their program.

Tips for Success

1. Appoint a **director of the project**; one who can accomplish the preliminary steps as outlined above. This lead person must not only serve as the HyperCard specialist, a part-time technology "cheerleader," a resource scavenger, a tactician who can pull many different strings all at once, and a bulldog who will keep the project moving and on task.

2. **Select teachers who are willing to experiment**. As the project evolves, the teachers must move beyond the packaged software applications and meet head-on the full creative power of the technology.

3. **Establish a budget for training**. The project teachers must have access to conferences, workshops, and training opportunities.

4. **Provide full-time use of the equipment** for the project teachers. It is imperative that the equipment be available at all times. Equipment that moves in and out of the teacher's classroom to be shared by others will irreparably derail the direction and thrust of the learning process.

5. **Be patient**. Teachers must be permitted to move at their own pace. This means that they may "play" with the technology or even leave it idle for weeks on end. Creativity necessitates a full-term gestation period.

6. **Keep the goals manageable**. To start, work with only those programs that are directly applicable. There is a danger in overloading first-time users. The capabilities of the technology must evolve in proportion with the user's capacity to use it.

7. **Offer immediate technological support**. For busy teachers who are trying to incorporate sophisticated technology into their classrooms, there is nothing more frustrating than hitting a technological "glitch" with no one to turn to for support or direction.

8. **Make certain that the project teachers see the current technology literature**. This is important on two levels: 1) it allows the teacher to gain a better understanding of what is happening in the field; and 2) it creates a sense of participation in a field that is creative and on the forefront of educational reform.

9. **Use resource people**. Speakers, inservice, and in-house demonstrations can serve not only as important "how-to" boosts, but they can add a timely dose of motivation.

10. **Hold regular technology team support meetings**. A user's energy and enthusiasm can suffer with a sense of isolation. Strategically placed team meetings work to create a sense of a larger project. Moreover, they facilitate sharing and provide an ideal format to work out common problems.

11. **Involve students**. Most team members felt that the sooner they started students on the technology, the faster their projects developed.

12. **Nurture administrative and staff support**. The growth and longevity of any building project requires the support of colleagues.

13. **Teachers should thoroughly learn the program they are on before they move on to something new**. Several of the project participants felt they rushed from one program to another without really mastering any. This gave them a sense of breadth, but not depth. It also made them feel they were working on a limited, superficial level.

Chapter Three Multimedia in the Classroom

Multimedia in the Classroom

Classroom applications

Without exception, the teachers involved with the Bloomington hypermedia project ultimately came to the same conclusion regarding multimedia—that the technology has pushed the potential of computers to the point where it may easily change the nature of instruction. The users were particularly impressed with its multidimensional capabilities. By this they meant its capacity to serve as an interactive tool with students; to arrange, organize, and store teacher lessons; to combine and enhance a combination of mediums; to focus student attention; and to unleash the creativity of both the teacher and the student. In other words, multimedia technology allowed the teacher to use all modes of instructional patterns and nurture all learning styles.

The adaptability and flexibility of multimedia technology in the classroom is seen in the wide range of instructional uses employed by the project teachers. Five general instructional categories defined the classroom use of the technology.

Presentation Design and Enhancement

Multimedia technology serves as a vehicle for teachers to enhance their familiar patterns of presentation and, more significantly, to create new ones.

Presentations are clearer—content is efficiently organized, stored, and recalled.

The technology facilitates a more controlled pacing of the material—content can be quickly replayed, highlighted, slowed, or realigned.

Students' attention can be focused—the teacher moves student attention from the overhead image, to the video screen, or to themselves.

Presentations can be designed in a multimedia format which allows the teacher to approach an idea from varying points-of-view, to add drama to a presentation, and to touch a wider variety of learning styles.

Scenario: In his tenth-grade biology class teacher Mike McKay wanted to redesign his lesson on cell division. In the past, his lesson consisted of a lecture highlighted with three pictures from the text and whatever enhancements he could draw freehand on the chalkboard. With multimedia technology, the lesson took on a whole new look. Students not only heard what McKay had to say, they saw key lecture notes on the overhead called up strategically by the instructor; they watched a teacher-designed computer animation, they looked at numerous slides from the videodisc, and they saw a short video of an actual cell division. All of these features were guided and controlled by McKay to enhance the lesson and maximize student learning.

Expanded Student Study Projects

Hypermedia allows the teacher to add an exciting new dimension to student-directed study, goal setting, and research.

The easily accessed information contained on the discs provides an enormous repository of data for students to investigate.

The technology makes it easy for students to organize and arrange data in unique ways.

The software and multimedia nature of the technology allows students to see their research in an exciting, exploratory way.

Students are self-contained on the technology.

The "hands-on" technology is highly motivational and flexible.

Scenario: Three humanities students in a Western Civilization class chose to study a composer for their independent study report. With the University of Delaware program and a CD ROM (a compact disc player component), the students, working as a team, easily accessed the major works by Vivaldi, a biography on the composer's life, detailed musical scores, musical selections, slides of the composer and his environs, numerous critiques on Vivaldi, his musical style, and the age in which he worked. The students shaped all this into a multimedia slide show for the rest of the class.

Guided Practice

Teachers find multimedia technology an invaluable tool to help students gain additional practice with activities introduced in the classroom.

Students who want further practice in a particular area discover that the technology is a handy and patient resource.

Students who do not fully grasp a concept in class can use the technology for remediation.

Guided practice on the hypermedia is easily accessible and does not require intensive teacher involvement.

Scenario: In an Advanced Placement Art History class, students were required to identify art styles by observing representative paintings. Using teacher-selected slides from the National Gallery, students who wanted to practice their skills of artistic identification went to the HyperCard station after school or during their lunch period and practiced individually. At the station, students studied at their own pace, in their own way, those areas which needed the most work.

Individualized Instruction

The teachers soon discovered that lessons using multimedia had an unexpected benefit—they could be used as individualized make-up, review, or reinforcement instruction.

Students who miss class can be placed at the multimedia station to review the lesson missed.

Students who need more instruction can find it at the multimedia station.

Students who want review or reinforcement can use multimedia lessons.

Students who simply want to focus on a particular interest can call up the part of the lesson they need.

The technology station is a non-threatening place to increase proficiency levels.

Scenario: Many of the foreign language drills done in class can be recreated with multimedia technology. Students who miss class, want more instruction, or simply want to review are directed to the multimedia station for individualized interaction with teacher lessons.

Creativity and Thinking Stations

The teachers came to realize that some of the best use of the technology happened when they were not involved. When the stations were left open to student discovery and creativity, imaginative and valuable things began to happen.

Students use the technology for higher thinking activities.

The technology stations are seen by students as places to problem solve, create, make judgments, and stimulate interest levels.

Students use the technology to do positive things the teachers did not think of or anticipate.

The technology is highly motivational for students—it is a place to unleash the creative spirit.

Scenario: A student in a Western Civilization class used a scanner to put a drawing of a Gothic cathedral into HyperCard. Her exploration with HyperTalk (programming language) soon led her to a very creative game where participants could move around the cathedral discovering its (the cathedral's) structural elements. This program was later used by the art history teacher to enhance his medieval art lessons. Unexpected discoveries will inevitably evolve from a technology that is so flexible, easy to use, and limitless.

Observations About Instructional Use

When asked to summarize how multimedia technology shaped their instruction, the participating teachers offered seven general areas of use.

1. All of the teachers expressed delight with the technology as an outlet for creativity. It allows them to put lessons together like they have never been able to before. Finally, here is a tool that matches the creative energy of the innovative teacher.

2. The technology offers an invaluable tool for organization. The flexibility of the technology permits the teachers to organize lessons in a manner that fits their designs and the learning needs of their students. Moreover, these teacher-designed lessons can easily be rearranged, stored, and recalled as the teacher directs.

3. Multimedia heightens teacher interest in lesson design. Lessons that had served adequately before, can easily be redesigned and enhanced to become something new and exciting. The technology adds a dimension of fun into lesson construction.

4. As students responded positively to multimedia instruction, the teachers created more technologically based lessons and, not surprisingly, more sophisticated and custom-made lessons. The materials then became more and more the product of the teacher's mind.

5. As teachers grew familiar with multimedia, the effectiveness of the technology grew proportionately. Teachers started seeing results. Student attention remained focused longer, understanding of the material seemed to be heightened, and there seemed to be a greater interest in the multimedia lessons.

6. Hypermedia provides not only expanded information available to teachers, it offers it in an easily accessible format.

7. Hypermedia allows the teacher to work in any model of instruction: directive, investigative, or interactive. Multimedia technology facilitates instruction when the teacher is providing information, establishing exploratory activities, or enabling students to create their own learning opportunities.

Future Development

Pilot projects must serve as the backbone for long-range planning. Hence, the data and experience gathered must be interwoven into the educational expectations of the district: its goals, its curriculum, and its resources. Over the next year, the multimedia technology program in Bloomington will continue to evolve to meet these expectations. The areas listed below form the "next step" for the Bloomington project.

1. **Room alterations and redesign**. Presently, technology has been imposed into a physical teaching environment that was not designed for technology. Although it is expensive, some classrooms will be redesigned to facilitate multimedia. In a biology room, for example, dual televisions will be wall-mounted for better student viewing, cables will be permanently installed, and the teacher's computer and disc player will be moved from a rolling cart to a teaching stand built specifically to meet the standards of the equipment.

2. **Technology station enhancement**. The movable carts on which the technology is housed will be improved to meet teaching needs. For example, one problem cited by the teachers hinges on the fact that the carts do not have enough surface space to hold printed materials or lecture notes. Small but important physical problems like this one emerge that need attention to improve the capacity of the teacher to teach.

3. **Writing time expansion**. There is a rule of thumb that has been true with each project initiated—the longer the teachers have the equipment, the more they want to do with it. Exposure breeds innovation. As a result, more time for teachers to develop creative uses for hypermedia is required. This follow-up time is less geared to learning the equipment and software than it is to manipulating the media in previously unforeseen ways.

4. **Concept expansion**. As teachers use hypermedia with students, new directions and projects will evolve. An organic technology program must account for the "twists and turns" that any pilot will inevitably take. Two humanities teachers, for instance, want to establish a small HyperCard lab where students will teach other students how to create with HyperTalk (HyperCard programming language). It is the hope of the teachers that as the lab is used and as the number of students familiar with HyperTalk grows, new and innovative student-generated learning and teaching strategies will evolve. In essence then, there will be a project within a project.

5. **Software repurposing**. As the teachers become more sophisticated with the available software, their demands for it stretch into new areas and uses. This means that teachers have to be given the time, resources, and support to repurpose the software.

6. **Teacher involvement growth**. As more equipment is directed into the technology program, the project teachers must "spread the good word." A system of inservice, workshops, and teacher/teacher tutoring must be established so classroom instructors can motivate others to use hypermedia in their own teaching.

7. **Technology funds assessment**. The directors of the hypermedia program must be dedicated to the often arduous process of securing funds to expand technology. This means they must inform, lobby, and, ultimately sell the expediency and cost-effectiveness of technology to those who direct the budgets.

8. **Technology updates: seminars, workshops, and literature.** In a rapidly changing and growing field, it is imperative that all involved must stay abreast of innovations or changes in the field. This means that teachers must be alerted to relevant seminars, workshops, literature, and resources.

Appendices

Appendix A

Bloomington's Multimedia Workstation

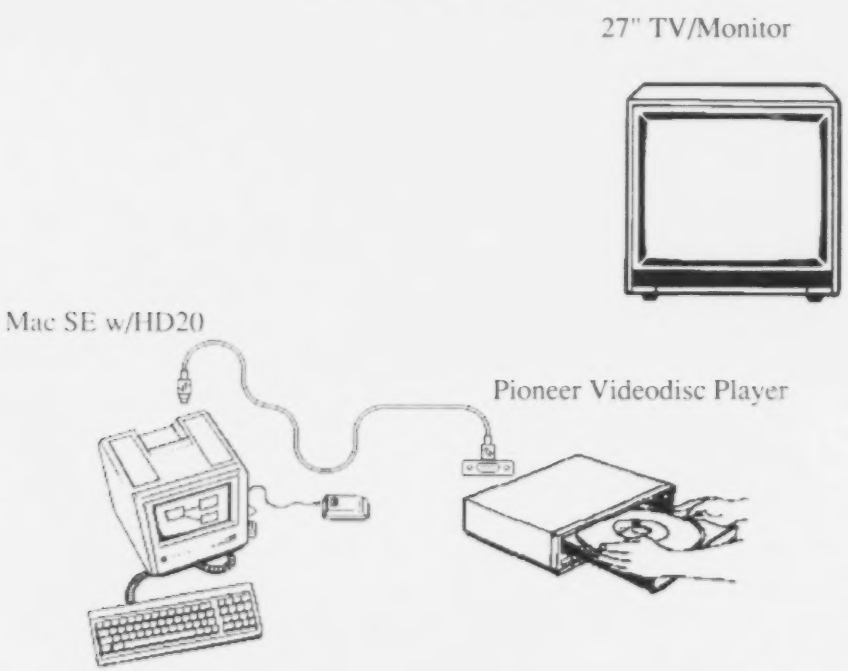
The equipment needed for any school program varies with the scope of the program, the number of educators involved, the resources of the district, and the commitment of the participants. Equipment used in the Bloomington Project has been divided into three possible levels of involvement. Estimated costs are given for each level.

Start-Up Costs

Level one includes the basic equipment for one teaching station:

1. A Macintosh Classic computer with a 40mg hard drive ($1199).
2. A 2200 Pioneer videodisc player with wireless remote ($895).
3. A 27" television monitor ($650).

Total estimate for level one—$2744



Level two includes equipment to be <u>added</u> to level one to expand the teaching/learning capabilities:

1. An overhead with a wide angle lens ($250).

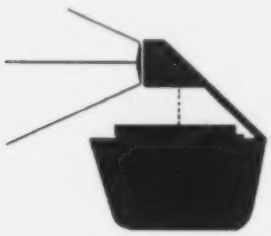
2. A Liquid Crystal Display (LCD) ($1400—see Appendix A for a more complete breakdown of costs). The overhead and the LCD allow the user to project whatever is on the computer screen onto a wall screen.

3. A MacTilt ($70). MacTilt sits under the computer so the user can position the screen for more advantageous viewing.

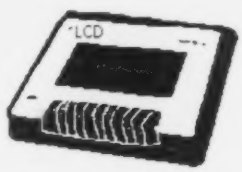
4. A track ball ($100). The track ball facilitates greater speed and does not require as much space to operate as the standard mouse.

Total estimate for level two—$1820

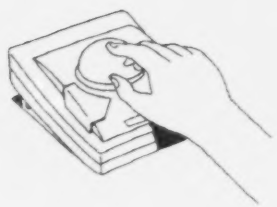
Overhead Projector



LCD Projection Panel



Track Ball



Level three equipment assists the teacher with using level one and two hardware:

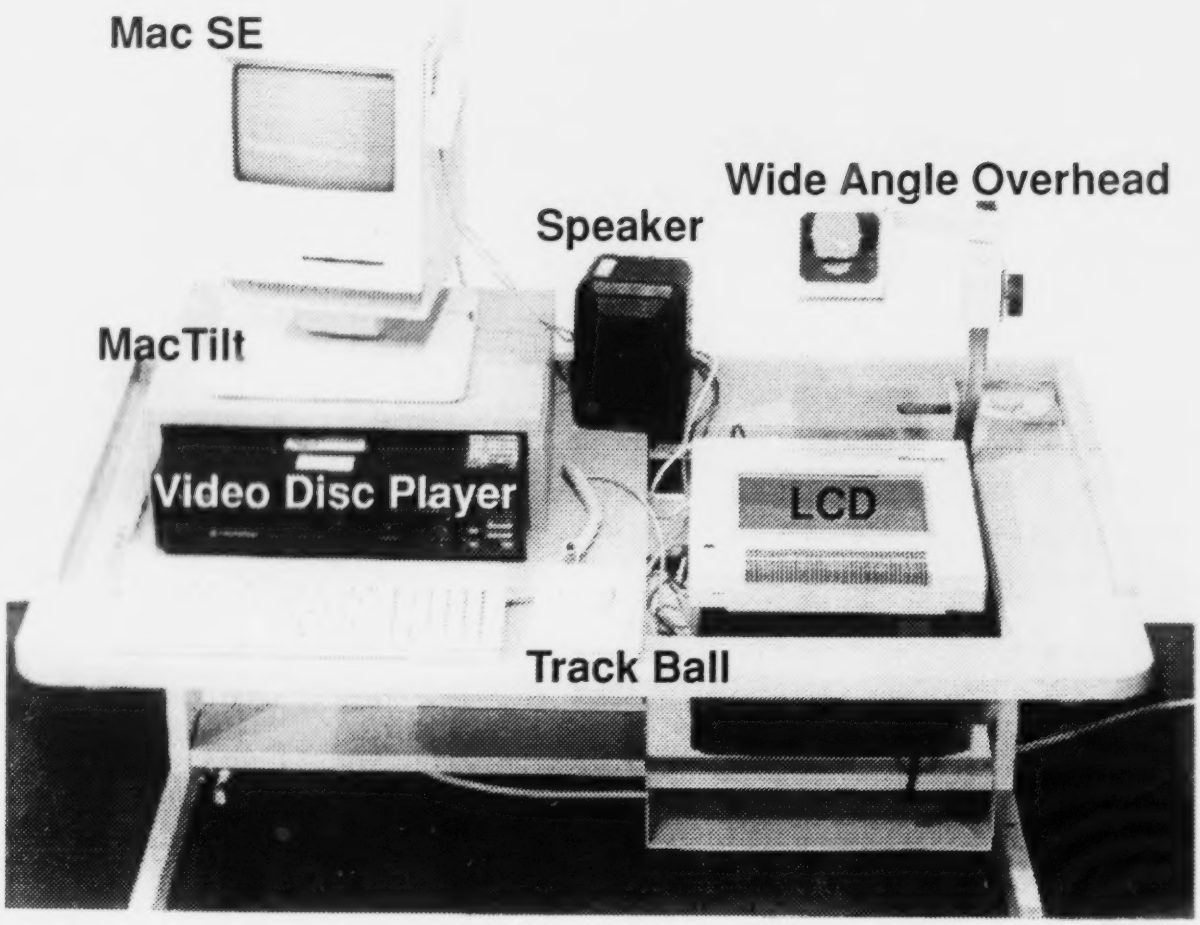
1. A cart—the Bretford Universal Workstation ($337). Housing level one and level two equipment on this cart makes the Hypermedia portable and more accessible.

2. A television cart with electrical access ($170). With this cart user can move the television with the workstation.

3. A surge protector power electrical strip ($74).

4. An amplified speaker to enhance sound ($75).

Total estimate for level three—$620



Bloomington's Videodisc/ HyperCard Equipment

Macintosh SE w/ 20mg HD $1199

Cart - Bretford Universal OH Workstation UCS 700 ..... $337

Bretford Surge Protector Power Strip UCSPS $74

Bretfort TV Cart 54" w/electrical extension cord $170

3M Overhead Projector w/wide angle lens $235

Kodak Display
- Kodak Data Show HR for Mac SE $1280
- Kodak Data Show Video Adapter for SE $100
- Kodak Data Show Extension Cable $46

VestaFire Speaker $75

MacTilt - Ergotron for Mac $67

Turbo Mouse (Trackball) by Kensington (Mac SE, Mac II) $119

Videodisc Player
- Pioneer Model LD-V4200 Pioneer $1095
  - Wired Remote Control $65
  - Cable to Mac $25
- Pioneer Model LD-V2200 w/wireless remote $895
  - cable to Mac $25

27" JVC TV AV27595 ..... $629

Appendix B

Multimedia on Other Platforms

Many of the multimedia applications used in the Bloomington project can also be accomplished by using other types of computers. It is a three-step process.

First, select the hypermedia software that runs on your model of computer. The following list shows selected hypermedia software which runs on specific models of computers.

TutorTech
Apple IIe, Apple IIc, Apple IIgs (requires 128k)

HyperScreen
Apple IIe, Apple IIc, or Apple IIgs (requires 128k)
MS-DOS machines (requires 640k)

HyperStudio
Apple IIgs (requires 1 meg)

HyperCard
Macintosh (requires 2 meg of memory, hard drive suggested)

LinkWay
MS-DOS machines (requires 640k, hard drive suggested)

Vid Kit
MS-DOS machines (requires 640k, hard drive suggested)

Second, connect your computer to a videodisc player. Most computers will interface with a Pioneer model 2200 or 4200. There are also other connection possibilities.

The following equipment is needed to connect a computer to a videodisc player. Pioneer manufactures the necessary cables to connect the 4200 and 2200 videodisc players to an Apple computer.

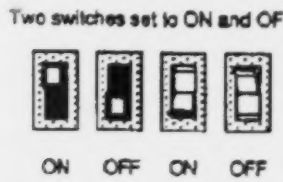
WARNING: Never have your computer turned on when you are inserting or removing a card. This also applies to changing switch settings while a card is in the machine. Please be careful.

The built-in modem port of the Apple IIgs simplifies setup. Use cable model CC-04 to connect the videodisc player to the modem port of a IIgs. Plug in the proper cable from the interface port in the back of your videodisc player to the modem port in the back of your computer. Go to the Apple IIgs control panel and under the slots menu, ensure that slot 2 is at its default setting of modem port. Check that all the selections under the modem port menu are at their default settings; in other words, that every selection on the menu is preceded by a check mark. If this is not the case, change the item so that the check mark appears.

For an Apple IIe, a super serial card is needed to connect the player to the computer. Cable model CC-03 will connect the videodisc player with the Apple II super serial card. To use the Apple II super serial card with an Apple IIgs, IIe, or IIc follow the directions below.

1. Adjust the switch settings and jumper block on your super serial card.

   You'll find the switches in the upper left hand corner of your card. The following diagram shows you two types of switches in the off and on positions, depending on your card type. Find the type which matches your card. Your card may also use "closed" to mean the "on" position. The diagram below illustrates the settings.

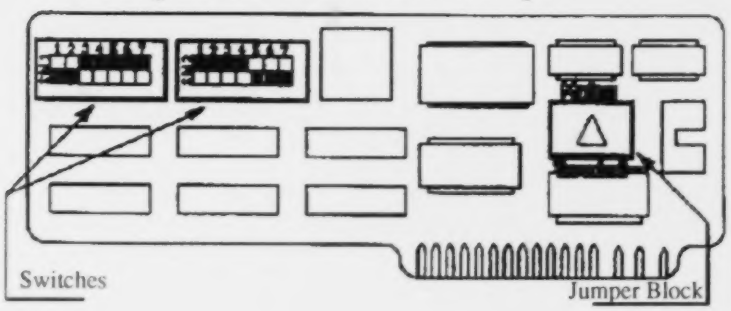


The switch settings are:

Switch 1							Switch 2						
1-1	1-2	1-3	1-4	1-5	1-6	1-7	2-1	2-2	2-3	2-4	2-5	2-6	2-7
OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF

Set the jumper block to modem.

The diagram below illustrates the settings.



2. Place the card in a slot in your computer. Slot 2 is recommended.

3. Connect your super serial card to your videodisc player's interface port with Pioneer cable Model CC-03.

If you are using a Pioneer videodisc player, you may need to set the function switches located on the front panel of the LD V4200 videodisc player. Consult the LD-V4200 operating instructions for directions on changing switch settings. Follow these guidelines as you set the switches:

1. The first three switches do not affect the videodisc/computer setup. You may set them as you wish.

2. Switch 7 must be in the up position (at the setting for 4800 baud).

3. Switches 6 and 8 must be in the up position.

4. Switch 5 is optional. The up (default) position is recommended. In this position, your background screen will appear entirely blue when your player is on, but no disc is playing. This way you can easily note that your player is turned on.

Third, now that your computer is connected to a video disc player, use the hypermedia program you have selected to design and run multimedia presentations. Follow the directions which come with the software to design your hypermedia stacks.

Other Equipment

Other equipment that may be useful in a multimedia station includes:

Apple video overlay card

Speakers

CD-ROM drive

Audio digitizing system

Image scanner

Appendix C

Hypermedia Resources

Software Producers

The following list is by no means complete. It represents only a selection of software and hardware available and in use by Minnesota educators at the time of this publication.

Tutor-Tech
Techware Corporation
P.O. Box 151085
Altamonte Springs, FL 32715
407-695-9000
Cost: $195
(runs on 128k Apple II series computers)

HyperCard
Apple Computer, Inc.
free
(runs on Macintosh computers)

HyperScreen
Scholastic Inc.
P.O. Box 7502
Jefferson City, MO 65102
1-800-541-5513
Cost: $99
(runs on 128k Apple II series computers)

HyperStudio
Roger Wagner Publishing, Inc.
1050 Pioneer Way
Suite "P"
El Cajon, California 92020
619-422-0522
Cost: $89
(Apple IIgs specific: Requires 1.25 meg of memory)

LinkWay
IBM
Marketing and Services, Dept. ZVO
1133 Westchester Avenue
White Plains, NY 10604
(for MS-DOS machines)

Audio Visual Connection
IBM
Marketing and Services, Dept ZVO
1133 Westchester Avenue
White Plains, NY 10604
(for MS-DOS Machines)

Videodisc Producers

Encyclopaedia Britannica Educational Corporation
310 South Michigan Ave.
Chicago, IL 60604
1-800-554-9862

Optical Data Corporation
30 Technology Drive
Warren, NJ 07060
1-800-524-2481

University of Delaware
Bruce Lambrecht, Instructional Technology
Willard Hall Education Building
Newark, DE 19716
302-451-2487

Videodiscovery
1515 Dexter Ave. N. #400
Seattle, WA 98109
1-800-548-3472

Voyager Corporation
2139 Manning Ave.
Los Angeles, CA 90025
1-800-446-2001

ZTEK
P.O. Box 1985
Lexington, KY 40503
1-800-247-1603

Selected Videodiscs

Bio Science	VideoDiscovery
Bio Sci II	VideoDiscovery
Cell Biology	VideoDiscovery
Doing Chemistry	Ztek
Downlink Shuttle (Vol. 4)	Voyager
Earth Science	Optical Data Corporation
Great Quake of 89	Voyager
In The Holy Land	Optical Data
Life Cycles	VideoDiscovery
The Louvre	Voyager
Vol. 1 - Paintings & Drawings	
Vol. 2 - Sculptures, Objects d'Art	
Vol. 3 - Antiquities	
Martin Luther King	Optical Data
Music Series	University of Delaware
National Art Gallery	VideoDiscovery
Planetscapes	Optical Data
Physical Science	Optical Data
Space Shuttle	Optical Data
Shuttle	Apple Computer
Vote '88	Optical Data
Voyager Gallery	Ztek

For Controlling Your Own Stacks

VIDEODisc Accessory	The Voyager Company
The Voyager VideoStack	The Voyager Company
(Both available presently as a package)	
HyperCard Videodisc Toolkit User's Guide	Apple Computer

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